REF 02-RF-01021, DWF-034-02

Rocky Flats Environmental Technology Site

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

BUILDING 827 CLOSURE PROJECT

REVISION 0

April 11, 2002

CLASSIFICATION REVIEW NOT REQUIRED PER EXEMPTION NUMBER CEX-005-02

1/38

RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)

BUILDING 827 CLOSURE PROJECT

REVISION 0

April 11, 2002

Reviewed by: _____ Date: 4/16/02
Paul Miles, Quality Assurance

Reviewed by: _____ Date: 4/17/02
Duke Snyder, RISS ESH&Q Manager

Approved by: _____ Date 4/18/02
Kurt Kehler, K-H Project Manager

2

TABLE OF CONTENTS

ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U S Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 827 Because this facility was anticipated to be a Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) All facility surfaces were characterized in this RLC, including the interior and exterior surfaces [i e , floors (slabs), walls, ceilings and roofs] Environmental media beneath and surrounding the facility were not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

The RLC encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP) The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report

Results indicate that no radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400 5 No asbestos containing materials were identified All beryllium sample results were less than 0 1 $\mu g/100cm^2$ Any hazardous-waste items and PCB ballasts will be removed prior to demolition and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal,* as applicable All concrete associated with these facilities meet the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete

Based upon this RLCR and subject to concurrence by the CDPHE, Building 827 is considered to be a Type 1 facility To ensure that the facility remains free of contamination and that RLC data remain valid, isolation controls have been established, and the facility has been posted accordingly

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Building 827 Because this facility was anticipated to be a Type 1 facility, a PDS characterization was performed All facility surfaces were characterized in this RLC, including the interior and exterior surfaces [i e , floors (slabs), walls, ceilings and roofs]. Environmental media beneath and surrounding the facilities were not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed Among these is Building 827 The location of this facility is shown in Attachment A The facility no longer supports the RFETS mission and needs to be removed to reduce Site infrastructure, risks and/or operating costs

Before the facility can be removed, a Pre-Demolition Survey (PDS) must be conducted, this document presents the PDS results The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP) The PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report

1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort PDSs are performed before building demolition to define the final radiological and chemical conditions of a facility Final conditions are compared with the release limits for radiological and non-radiological contaminants PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types

1.2 Scope

This report presents the final radiological and chemical conditions of Building 827 Environmental media beneath and surrounding the facility are not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this RLC were the same DQOs identified in the Pre-Demolition survey Plan for D&D Facilities (MAN-127-PDSP) Refer to section 2 0 of MAN-127-PDSP for these DQOs

2 HISTORICAL SITE ASSESSMENT

A facility-specific Historical Site Assessment (HSA) was conducted to understand the facility history and related hazards The assessment consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP) Results were used to

6

identify data gaps and needs, and to develop radiological and chemical characterization packages Results of the facility-specific HSA were documented in a facility-specific Historical Site Assessment Report (HSAR, refer to the Building 865 Cluster HSA in the RISS Characterization Project files) In summary, the HSAR identified no potential for radiological and chemical hazards, except the potential for asbestos containing material and PCBs in paint and light ballasts

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

B827 was characterized for radiological hazards per the PDSP Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces Measurements were performed to evaluate the contaminants of concern Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describe the minimum survey requirements (refer to the RISS Characterization Project files)

One radiological survey package was developed for the interior and exterior of the facility The survey package was developed in accordance with Radiological Safety Practices (RSP) 16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure* Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16 02 *Radiological Surveys of Surfaces and Structures* Radiological survey data were verified, validated and evaluated in accordance with RSP 16 04, *Radiological Survey/Sample Data Analysis* Quality control measures were implemented relative to the survey process in accordance with RSP 16 05, *Radiological Survey/Sample Quality Control* Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C, Radiological Data Summary and Survey Maps The radiological survey unit package is maintained in the RISS Characterization Project files

TSA measurements (15 random, 10 biased and 2 QC), RSA measurements (15 random and 10 biased), and scan surveys (5% of interior and exterior surfaces, biased towards areas of greatest potential for contamination) were performed on Building 827 Results indicated no elevated activity above the appropriate $DCGL_w$ values (refer to Attachment B) Therefore, the PDS confirmed that Building 827 does not contain radiological contamination above the surface contamination guidelines provided in the PDSP Isolation control postings are displayed on the facility to ensure no radioactive materials are introduced

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 827 was characterized for chemical hazards per the PDSP Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on or in the facility Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined A Chemical Characterization Package (refer to RISS Characterization Project files) was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers Contaminants of concern included asbestos, beryllium, RCRA/CERCLA

1

constituents, and PCBs Refer to Attachment C, Chemical Data Summaries and Sample Maps, for details on sample results and sample locations

4.1 Asbestos

A CDPHE-certified asbestos inspector conducted an inspection of Building 827 in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1* No building materials suspected of containing asbestos were identified, and therefore, no sampling for asbestos was conducted

4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 827 was an anticipated Type 1 facility There was not, however, adequate historical and process knowledge to conclude that beryllium was not used or stored in this building Therefore, biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999* Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition

All beryllium smear sample results were less than 0 1 µg/100cm^2 Beryllium laboratory sample data and a location map are contained in Attachment C, Chemical Data Summaries and Sample Maps

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Based on the HSAR, interviews and facility walkdowns of Building 827, there was no record of operations using materials that could lead to RCRA/CERCLA concerns, except the storage and use of multiple batteries The building has no history of spills or releases of RCRA/CERCLA regulated materials, however, the presence of a large amount of reddish dust under one of the battery racks (i e , the southeast rack) indicated a possible battery leak Therefore, the area was sampled, and the concrete core sample was analyzed for metals (via TCLP) All metal concentrations were below the regulatory levels defining characteristic hazardous waste TLCP laboratory sample data and a location map are contained in Attachment C, Chemical Data Summaries and Sample Maps

Sampling for lead in paint in Building 827 was not performed Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR, interviews and facility walkdowns of Building 827, no PCB-containing equipment were ever present in the building, making the potential for PCB contamination resulting from spills highly unlikely However, a liquid was observed under the diesel generator, and was sampled and analyzed for PCBs Results were "non-

detects", indicating no PCB contamination of the floor Since the sampling, the liquid has been removed PCB laboratory sample data and a location map are contained in Attachment C, Chemical Data Summaries and Sample Maps

Based on the age of the facility (constructed prior to 1980), paints used on the facility may contain PCBs Therefore, painted surfaces will be managed as PCB Bulk Product Waste

Because some facilities may contain fluorescent light ballasts containing PCBs, fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations PCB ballasts will be identified based on factors such as labeling (e g , PCB-containing and non-PCB-containing), manufacturer, and date of manufacturing All ballasts that do not indicate non-PCB-containing are assumed to be PCB-containing

5 PHYSICAL HAZARDS

Physical hazards associated with Building 827 consist of those common to standard industrial environments There are no unique hazards associated with the facility The facility has been relatively well maintained and is in good physical condition, and therefore, does not present hazards associated with building deterioration Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for the decommissioning of Building 827, and consequent waste management, are of adequate quality to support the decisions documented in this report The data presented in this report (Attachments B and C) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate

- the *number* of samples and surveys,
- the *types* of samples and surveys,
- the sampling/survey process as implemented "in the field", and,
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment D

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 827 will generate a variety of wastes Estimated waste types and volumes are presented below All wastes can be disposed of as sanitary waste, except PCB Bulk Product Waste There is no radioactive waste PCB Bulk Product Waste will be managed pursuant to Site waste management procedures

Waste Volume Estimates and Material Types, Building 827							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
B827	300	0	200	0	0	0	0

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 827 is classified as a RFCA Type 1 facility pursuant to the RFETS Decommissioning Program Plan (DPP, K-H, 1999) The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC data, and will be subject to concurrence by the Colorado Department of Public Health and the Environment (CDPHE)

The RLC of Building 827 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria The facility does not contain radiological or asbestos-containing materials Any hazardous-waste items, and PCB ballasts will be removed prior to demolition and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations All demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal,* as applicable All concrete associated with the facility meets the criteria for recycling concrete per the RFCA RSOP for Recycling Concrete Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA

To ensure that the Type 1 facility remains free of contamination and that RLC data remain valid, isolation controls have been established, and the facility is posted accordingly

9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996 Rocky Flats Cleanup Agreement (RFCA), July 19, 1996

DOE Order 5400 5, "Radiation Protection of the Public and the Environment "

EPA, 1994 "The Data Quality Objective Process," EPA QA/G-4

K-H, 1999 Decommissioning Program Plan, June 21, 1999

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program,* Rev 1, November 1, 2001

MAN-076-FDPM, *Facility Disposition Program Manual,* Rev 3, January 1, 2002

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol,* Rev 3, April 23, 2001

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities,* Rev 0, April 23, 2001

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual, (NUREG-1575, EPA 402-R-97-016)

PRO-475-RSP-16 01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev 1, May 22, 2001

PRO-476-RSP-16 02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures,* Rev 1, May 22, 2001

PRO-477-RSP-16 03, *Radiological Samples of Building Media,* Rev 1, May 22, 2001

PRO-478-RSP-16 04, *Radiological Survey/Sample Data Analysis for Final Status Survey,* Rev 1, May 22, 2001

PRO-479-RSP-16 05, *Radiological Survey/Sample Quality Control for Final Status Survey,* Rev 1, May 22, 2001

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal

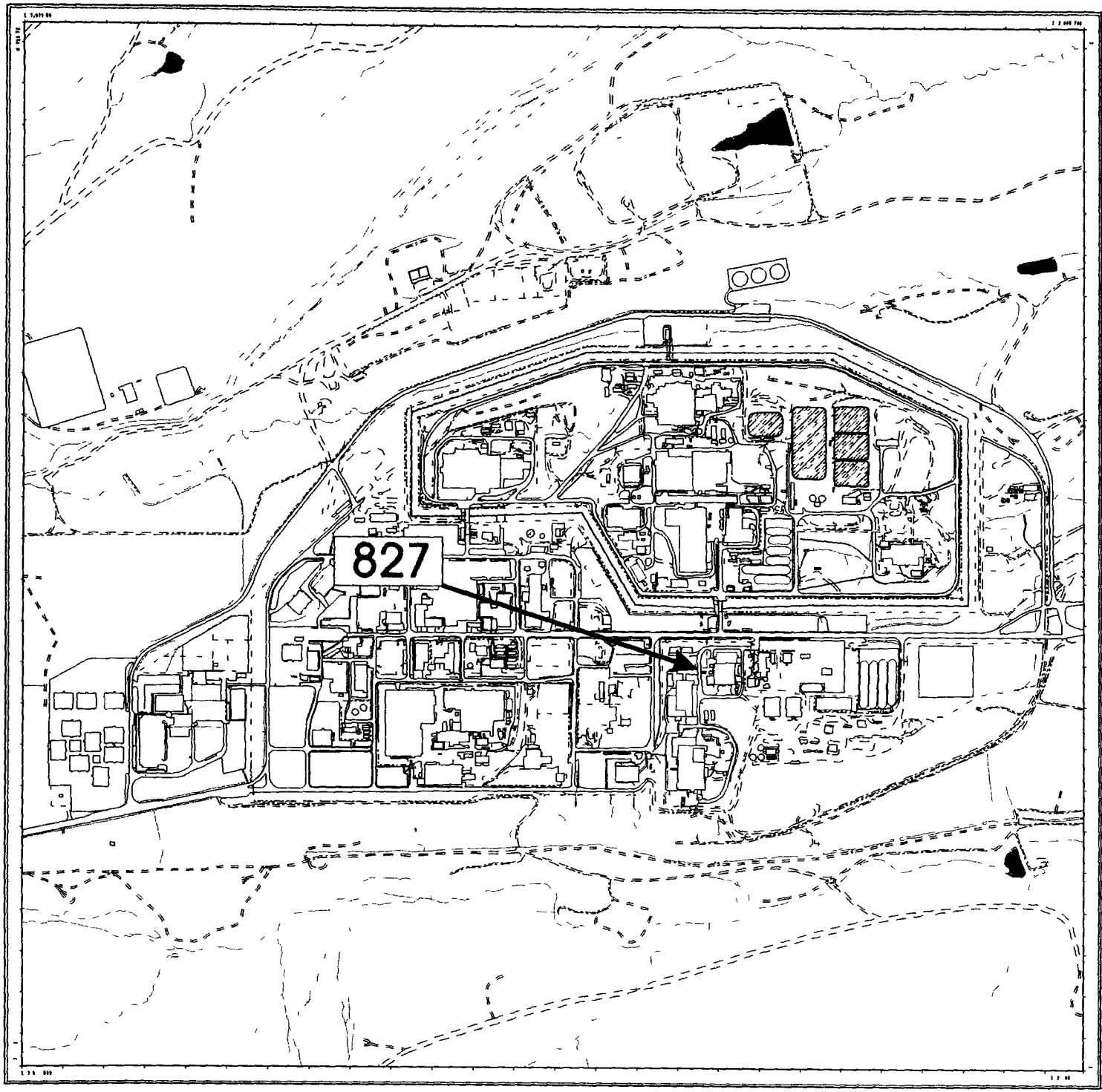
RFCA Standard Operation Protocol for Recycling Concrete, September 28, 1999

RFETS, Historical Site Assessment for Building 865 Cluster, July 2001

ATTACHMENT A

Facility Location Map

13



Building 827

Standard Map Features

- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES
Buildings, fences, hydrography roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas.
Digitized from the orthophotographs. 1/96

Scale – 1 1240
1 inch represents approximately 1038 feet
250 0 500 1000 ft

State Plane Coordinate Projection
Colorado Central Zone
Datum. NAD27

U S Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

Prepared by:
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KH
KAISER HILL

MAP ID FY 2002

April 10 2002

NT Svr w:/projects/fy2002/02-0102/overview 827.cdr

ATTACHMENT B

Radiological Data Summaries and Survey Maps

SURVEY UNIT G11-A-002
RADIOLOGICAL DATA SUMMARY

Survey Unit Description: Interior & Exterior of B827

15

G11-A-002
Data Summary

Total Surface Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-3 3		dpm/100 cm^2
MAX	56 4		dpm/100 cm^2
MEAN	22 4		dpm/100 cm^2
STD DEV	16 3		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	25 Number Required	25 Number Obtained	
MIN	-0 6		dpm/100 cm^2
MAX	12 1		dpm/100 cm^2
MEAN	1 9		dpm/100 cm^2
STD DEV	2 9		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT G11-A-002
TSA - DATA SUMMARY

Manufacturer	NE Electra	NE Electra	NE Electra
Model	DP-6	DP-6	DP-6
Instrument ID#	7	8	9
Serial #	1379	1136	1513
Cal Due Date	5/6/02	1/17/02	4/8/02
Analysis Date	11/26/01	12/3/01	12/3/01
Alpha Eff (c/d)	0 187	0 211	0 212
Alpha Bkgd (cpm)	2 7	2.0	5 1
Sample Time (min)	1 5	1 5	1 5
LAB Time (min)	1 5	1 5	1 5
MDC (dpm/100cm^2)	44 1	34 9	49 9

Sample Location Number	Instrument ID#	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1]
1	9	16 0	75 5	7 3	34 4	47 0
2	8	15 3	72 5	4 7	22 3	44 1
3	7	7 3	39 0	4 7	25 1	10 6
4	8	17 9	84 8	4 7	22 3	56 4
5	7	8 0	42 8	6 0	32 1	14 3
6	7	9 3	49 7	10 7	57 2	21 3
7	7	11 3	60 4	6 7	35 8	32 0
8	9	10 7	50 5	4 7	22 2	22 0
9	7	6 0	32 1	1 3	7 0	3 6
10	8	8 7	41 2	4 7	22 3	12 8
11	8	9 3	44 1	4 0	19 0	15 6
12	7	5 3	28 3	8 0	42 8	-0 1
13	8	14 7	69 7	8 0	37 9	41 2
14	7	7 3	39 0	4 0	21 4	10 6
15	7	10 0	53 5	6 7	35 8	25 0
16	8	12 7	60 2	0 7	3 3	31 7
17	8	7 3	34 6	4 7	22 3	6 1
18	8	10 0	47 4	4 0	19 0	18 9
19	8	17 3	82 0	2 7	12 8	53 5
20	8	5 3	25 1	8 0	37 9	3 3
21	7	8 0	42 8	10 7	57 2	14 3
22	7	7 3	39 0	3 3	17 6	10 6
23	7	8 0	42 8	6 7	35 8	14 3
24	7	10 7	57 2	4 7	25 1	28 8
25	7	10 7	57 2	8 0	42 8	28 8

1 Average LAB used to subtract from Gross Sample Activity

28 5	Sample LAB Average
MIN	3 3
MAX	56 4
MEAN	22.4
SD	16 3
Transuranic DCGL$_w$	100

QC Measurements

16 QC	9	16 7	78 8	15 3	72 2	16 0
13 QC	9	23 3	109 9	11 3	53 3	47 2

1 Average QC LAB used to subtract from Gross Sample Activity

62 7	QC LAB Average
QC MIN	16 0
QC MAX	47 2
QC MEAN	31 6
QC SD	22 0
Transuranic DCGL$_w$	100

1

SURVEY UNIT G11-A-002
RSC - DATA SUMMARY

Manufacturer	Eberline	Eberline	Eberline	Eberline
Model	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#	1	2	3	4
Serial #	833	1157	830	770
Cal Due Date	1/31/02	2/16/02	2/16/02	1/19/02
Analysis Date	12/3/01	12/3/01	12/3/01	12/3/01
Alpha Eff (c/d)	0 33	0 33	0 33	0.33
Alpha Bkgd (cpm)	0 2	0 0	0 1	0 0
Sample Time (min)	2	2	2	2
Bkgd Time (min)	10	10	10	10
MDC (dpm/100cm^2)	8 0	4 5	7 0	4 5

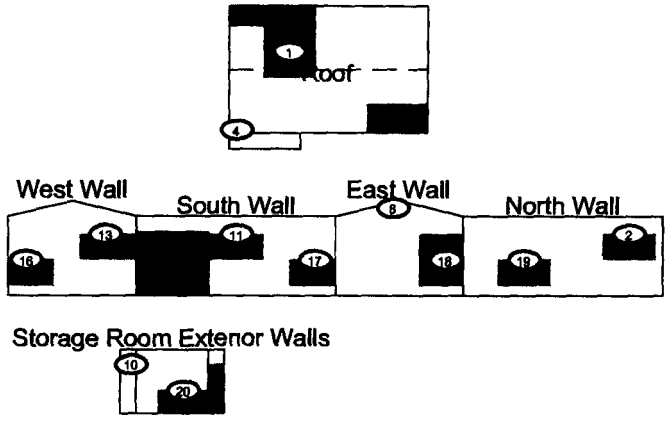
Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	1	1 0	2 4
2	2	1 0	3 0
3	3	0 0	-0 3
4	4	2 0	6 1
5	1	0 0	-0 6
6	2	0 0	0 0
7	3	0 0	-0 3
8	4	1 0	3 0
9	1	0 0	-0 6
10	2	1 0	3 0
11	3	1 0	2 7
12	4	0 0	0 0
13	1	1 0	2 4
14	2	0 0	0 0
15	3	1 0	2 7
16	4	1 0	3 0
17	1	2 0	5 5
18	2	4 0	12 1
19	3	1 0	2 7
20	4	0 0	0 0
21	1	0 0	-0 6
22	2	1 0	3 0
23	3	0 0	-0 3
24	4	0 0	0 0
25	1	0 0	-0 6
		MIN	-0 6
		MAX	12 1
		MEAN	1 9
		SD	2 9
		Transuranic $DCGL_W$	20

B

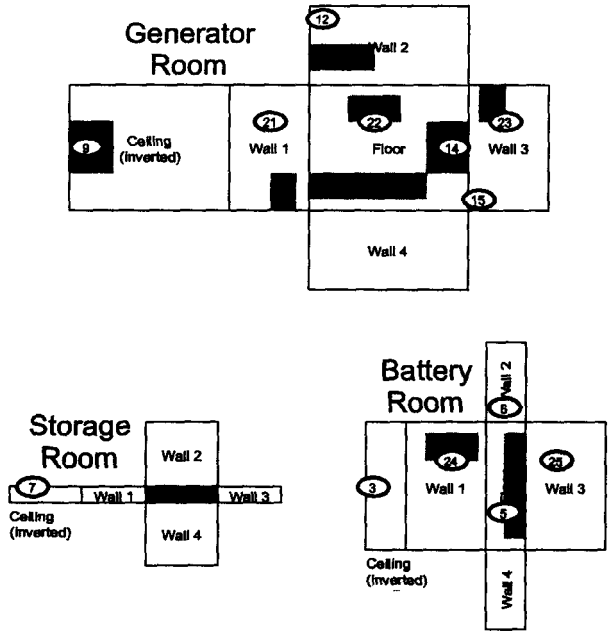
PRE-DEMOLITION SURVEY FOR BUILDING 827

Survey Area A **Survey Unit** G11-A-002 **Classification** 3
Building 827
Survey Unit Description Interior and Exterior of Building 827
Total Area 321 sq m **Total Floor Area** 39 sq m
Total Roof Area 39 sq m

B827 Exterior



B827 Interior



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30
0 METERS 10

1 inch = 24 feet 1 grid sq = 1 sq m.

Scan Survey Information
Survey Instrument ID #(s) 7, 8, 9
RCT ID #(s) 1, 2

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept 303-966 7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for

MAP ID 02-0102/B827-Sc

January 1, 2001

ATTACHMENT C

Chemical Data Summaries and Sample Maps

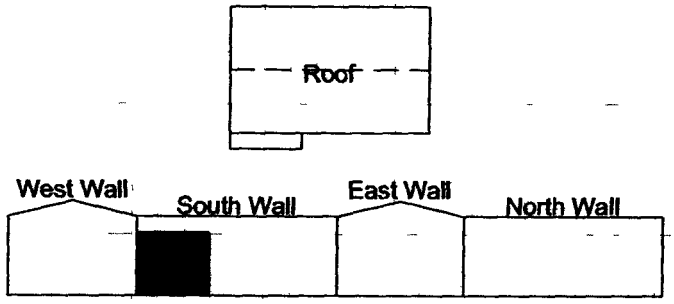
Beryllium Data Summary

Sample Number	Map Survey Point Location	Sample Location	Result ($\mu g/100\ cm^2$)
B827			
827-01022002-315-121	121	North wall of battery room, center	< 0 1
827-01022002-315-122	122	South wall of generator room, center	< 0 1
827-01022002-315-123	123	South wall of generator room, east side	< 0 1
827-01022002-315-124	124	Floor of generator room, center	< 0 1
827-01022002-315-125	125	North wall of generator room, east side	< 0 1

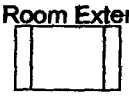
CHEMICAL SAMPLE MAP FOR B827

Beryllium

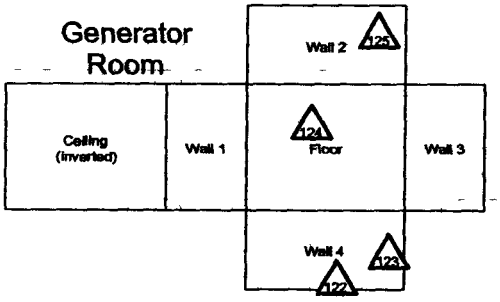
B827 Exterior

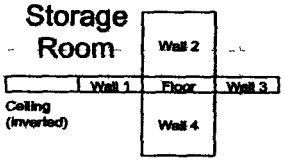


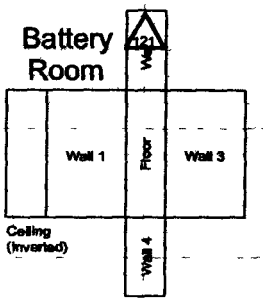
Storage Room Exterior Walls



B827 Interior







SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30

0 METERS 10

1 inch = 24 feet 1 grid sq = 1 sq m.

US Department of Energy
Rocky Flats Environmental Technology Site

Prepared by GIS Dept. 303-966 7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for

MAP ID. 02-0102/B827-BE

January 15, 2001

22

PCB Data Summary

Sample Number	Sample Location	Arcolor	Results (ug/kg)
02S0045-001 002	Bldg 827 Sludge under diesel generator (#1 on map)	All	Non-Detect
02S0045-002 002	Bldg 827 Sludge under diesel generator (#2 on map)	All	Non-Detect

Regulatory Limit for PCB's 50ppm

TCLP Metals Data Summary

Sample Location / Media	Sample Number: Analysis	Result (ug/L)
B827, concrete core under southeast battery rack (#4 on map	02S0045-004 002	TCLP Metals less than regulatory limits
B827, concrete core under southeast battery rack (#3 on map)	02S0045-005 001	TCLP Metals less than regulatory limits

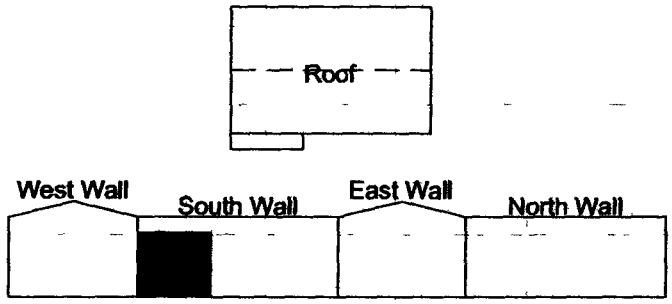
RCRA Metals

Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5 0
Barium (D005)	100 0
Cadmium (D006)	1 0
Chromium (D007)	5 0
Lead (D008)	5 0
Mercury (D009)	0 2
Selenium (D010)	1 0
Silver (D011)	5 0

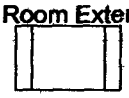
CHEMICAL SAMPLE MAP FOR B827

PCB & Metals

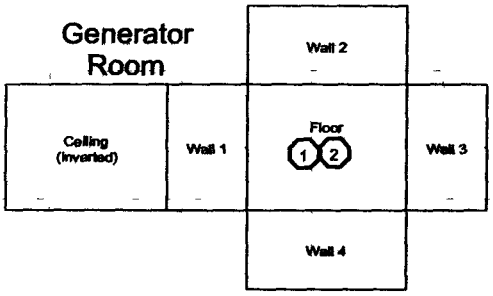
B827 Exterior

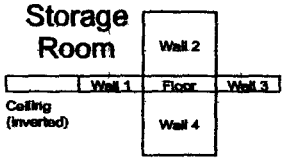


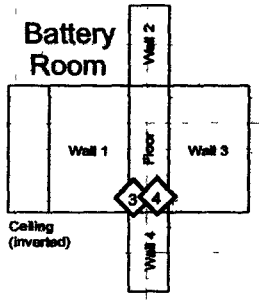
Storage Room Exterior Walls



B827 Interior







SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 30

0 METERS 10

1 inch = 24 feet 1 grid sq = 1 sq m.

US Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: [redacted]

MAP ID: 02-0102/B827-PCB

April 10, 2002

[redacted]

KAISER-HILL LLC

TCLP Metals Analysis Data Sheet

Lab Name	STL DENVER	**Client Sample ID**	02S0045-004 002
Lot/SDG Number	02S0045	**Lab WorkOrder**	ET1XV
Matrix	WATER	**Lab Sample ID**	D2B120251-001
% Moisture	N/A	**Date/Time Collected**	02/08/02 9 05
Units	UG/L	**Date/Time Received**	02/12/02 13 30

CAS No	Analyte	Conc.	Q	RL	Dilution Factor	QC Batch ID	Method	Instrument ID	Analysis Date	Analysis Time
7440-38-2	Arsenic	3 8	B	500	1	2049201	6010B	016	2/20/02	16 55
7440-39-3	Barium	910	B	10000	1	2049201	6010B	016	2/20/02	16 55
7440-43-9	Cadmium	3 8	B	10 0	1	2049201	6010B	016	2/20/02	16 55
7440-47-3	Chromium	20 8	B	60 0	1	2049201	6010B	016	2/20/02	16 55
7439-92-1	Lead	8 6	B	70 0	1	2049201	6010B	016	2/20/02	16 55
7782-49-2	Selenium	13 6	B	50 0	1	2049201	6010B	016	2/20/02	16 55
7440-22-4	Silver	0 47	U	140	1	2049201	6010B	016	2/20/02	16 55

U Result is less than the instrument detection limit (IDL)
B Estimated result Result is less than RL and greater than or equal to the IDL

[redacted]

TRENT SERVICES

KAISER-HILL LLC

TCLP Metals Analysis Data Sheet

Lab Name	STL DENVER	**Client Sample ID**	02S0045-004 002
Lot/SDG Number	02S0045	**Lab WorkOrder**	ET1XV
Matrix	WATER	**Lab Sample ID**	D2B120251-001
% Moisture	N/A	**Date/Time Collected**	02/08/02 9 05
Units	UG/L	**Date/Time Received**	02/12/02 13 30

CAS No	Analyte	Conc.	Q	RI	Dilution Factor	QC Batch ID	Method	Instrument ID	Analysis Date	Analysis Time
7439-97-6	Mercury	0 023	U	2 0	1	2049276	7470A	018	2/26/02	18 03

U Result is less than the instrument detection limit (IDL)

B Estimated result Result is less than RL and greater than or equal to the IDL

[redacted]

TRENT SERVICES

KAISER-HILL LLC

TCLP Metals Analysis Data Sheet

Lab Name	STL DENVER	**Client Sample ID**	02S0045-005 001
Lot/SDG Number	02S0045	**Lab WorkOrder**	ET1X8
Matrix	WATER	**Lab Sample ID**	D2B120251-002
% Moisture	N/A	**Date/Time Collected**	02/08/02 9 50
Units	UG/L	**Date/Time Received**	02/12/02 13 30

CAS No	Analyte	Conc.	Q	RL	Dilution Factor	QC Batch ID	Method	Instrument ID	Analysis Date	Analysis Time
7440-38-2	Arsenic	3 4	U	500	1	2049200	6010B	016	2/20/02	16 07
7440-39-3	Barium	433	B	10000	1	2049200	6010B	016	2/20/02	16 07
7440-43-9	Cadmium	0 55	B	10 0	1	2049200	6010B	016	2/20/02	16 07
7440-47-3	Chromium	4 8	B	60 0	1	2049200	6010B	016	2/20/02	16 07
7439-92-1	Lead	4 8	B	70 0	1	2049200	6010B	016	2/20/02	16 07
7782-49-2	Selenium	11 4	B	50 0	1	2049200	6010B	016	2/20/02	16 07
7440-22-4	Silver	0 70	B	140	1	2049200	6010B	016	2/20/02	16 07

U Result is less than the instrument detection limit (IDL)

B Estimated result Result is less than RL and greater than or equal to the IDL

[redacted]

SERVICES

KAISER-HILL LLC

TCLP Metals Analysis Data Sheet

Lab Name	STL DENVER	**Client Sample ID**	02S0045-005 001
Lot/SDG Number	02S0045	**Lab WorkOrder**	ET1X8
Matrix	WATER	**Lab Sample ID**	D2B120251-002
% Moisture	N/A	**Date/Time Collected**	02/08/02 9 50
Units	UG/L	**Date/Time Received**	02/12/02 13 30

CAS No	Analyte	Conc	Q	RL	Dilution Factor	QC Batch ID	Method	Instrument ID	Analysis Date	Analysis Time
7439-97-6	Mercury	0 023	U	2 0	1	2049277	7470A	018	2/26/02	18 17

U Result is less than the instrument detection limit (IDL)
B Estimated result Result is less than RL and greater than or equal to the IDL

Lab Name:Severn Trent Laboratories, Inc SDG Number:02S0045

Matrix: (soil/water) SO Lab Sample ID:D2B120259 001
Method: SW846 8082
PCBs (8082)

Sample WT/Vol: 15 / g Date Received: 02/12/02
Work Order: ET10R1AA Date Extracted 02/20/02
Dilution factor: 2 Date Analyzed 02/22/02
Moisture % 17

QC Batch. 2051165

Client Sample Id: 02S0045-001 002

CAS NO.	COMPOUND	CONCENTRATION UNITS. (ug/L or ug/kg) ug/kg	Q
12674-11-2	Aroclor 1016	79	U
11104-28-2	Aroclor 1221	79	U
11141-16-5	Aroclor 1232	79	U
53469-21-9	Aroclor 1242	79	U
12672-29-6	Aroclor 1248	79	U
11097-69-1	Aroclor 1254	79	U
11096-82-5	Aroclor 1260	79	U

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Tetrachloro-m-xylene	120	(51 - 112)
Decachlorobiphenyl	40	(55 - 119)

Lab Name:Severn Trent Laboratories, Inc. SDG Number:02S0045

Matrix: (soil/water) SO
Method SW846 8082
PCBs (8082)

Lab Sample ID D2B120259 002

Sample WT/Vol 10 / g
Work Order: ET10X1AA
Dilution factor 3
Moisture %:18

Date Received: 02/12/02
Date Extracted 02/20/02
Date Analyzed: 02/22/02

QC Batch 2051165

Client Sample Id: 02S0045-002.001

CAS NO	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/kg	Q
12674-11-2	Aroclor 1016	120	U
11104-28-2	Aroclor 1221	120	U
11141-16-5	Aroclor 1232	120	U
53469-21-9	Aroclor 1242	120	U
12672-29-6	Aroclor 1248	120	U
11097-69-1	Aroclor 1254	120	U
11096-82-5	Aroclor 1260	120	U

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Tetrachloro-m-xylene	109	(51 - 112)
Decachlorobiphenyl	8 6	(55 - 119)

ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium, PCBs and metals)

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed, the radiological survey assessment is provided in Table D-1, beryllium in D-2, PCBs in D-3, and metals in D-4 A data completeness summary for all results is given in Table D-5

All relevant Quality records supporting this report are maintained in the RISS Characterization Project Files This report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location

Beta/gamma survey designs were not implemented for Building 827 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process Stated differently, based on the well-established suite of actinides historically used at the RFETS, all of these actinides would emit alpha radiation in exceedance of the applicable transuranic DCGLs before other DCGLs would be exceeded for their respective Uranium species – Technical Basis Document 00162, Rev 0, *Technical Justification for Types of Surveys Performed During Reconnaissance Level Characterization Surveys and Pre-Demolition Surveys in RISS Facilities,* corroborates the use of this approach

Consistent with EPA's G-4 DQO process, the radiological survey design (for the survey unit performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired

SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs All data are useable based on qualifications stated herein and are considered satisfactory without qualification All media surveyed and sampled yielded results less than their associated action levels and with acceptable uncertainties However, one anomaly noted was failure to obtain a duplicate sample for each suite of PCB and Metal samples as specified in the RLC Chemical Characterization Plan, Revision 0, Dated December 11, 2001 The samples taken for each set (two PCB samples and two Metal samples) were co-located next to each other Both sets of results exhibited concentrations well below the action

32

levels, and as such, are indicative of analytical results that are repeatable with acceptable precision per DQA criteria Furthermore, results of all calibration verifications, method blanks, Laboratory Control Sample Duplicates and internal QA/QC standards verified the analytical batches for PCBs and Metals were within acceptable limits and produced quality results as specified in Statement Of Work module GR01-B 3 On this basis, the analytical data for PCBs and Metals meets the DQA criteria as stated in the original DQOs

Chain of Custody was intact, documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process Level 2 Isolation Control postings are displayed in this facility to ensure no radiological or hazardous materials are introduced thereby assuring PDS integrity On this basis, the Survey Unit and facility identified in this RLCR (Building 827) meet the unrestricted release criteria with the confidences stated herein

33

Table D-1 V&V of Radiological Surveys For Building 827

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16 00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	frequency	COMMENTS
ACCURACY	initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field, programmatic records
	daily source checks	80%<x<120%	≥1/day	Performed daily/within range
	local area background Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i e , no elevated anomalies)
PRECISION	field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM gridding methodology Survey Unit G11-A-002	statistical and biased	NA	Random w/ statistical confidence
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m
	Controlling Documents (Characterization Pkg, RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files), thorough documentation of the planning, sampling/analysis process, and data reduction into formats
COMPARABILITY	units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results
COMPLETENESS	Plan vs Actual surveys usable results vs unusable	>95% >95%	NA	See Table D-5 for details
SENSITIVITY	detection limits	TSA ≤50 dpm/100cm^2 RA ≤10 dpm/100cm^2	all measures	PDS MDAs ≤ 50% $DCGL_w$

Table D-2 V&V Of Chemical Results-Beryllium For Building 827

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep NMAM 7300 METHOD OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co	
QUALITY REQUIREMENTS		RIN ---->	RIN02D0649	
		Measure	frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i e , classification of Type 1 facility confirmed All results were below associated action levels
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks - lab & field	<MDL	≥1	
	interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable	>95% >95%	NA	
SENSITIVITY	detection limits	MDL of 0 012 ug/100cm^2	all measures	

Table D-3 V&V Of Chemical Results-PCBs For Building 827

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
PCBs	METHOD SW8082	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0045	
QUALITY REQUIREMENT				
		Measure	frequency	COMMENTS
ACCURACY	Calibrations Initial	r^2 >0 99	≥1/batch	No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed, all PCB concentrations below associated action levels
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - Lab	<MDL	≥1/batch	
PRECISION	MSD	75%<%R<125%	≥1/batch	
	field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	≤30 days extract ≤45 days analysis	NA	
	Controlling Documents (Plans, Procedures, maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/kg	NA	
COMPLETENESS	Plan vs Actual samples usable results vs unusable	>95% >95%	NA	
SENSITIVITY	detection limits	Various	all analytes	

Table D-4 V&V of Chemical Results-Metals For Building 827

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
Metals (total)	METHOD. SW6010/6020	LAB ---->	Severn-Trent, Denver, Co	
		RIN ---->	RIN02S0045	
QUALITY REQUIREMENT				
		Measure	frequency	COMMENTS
ACCURACY	Calibrations			No qualifications significant enough to change project decision, i e , classification of Type 1 areas confirmed; TCLP results below associated action levels
	Initial	linear calibration	≥1/batch	
	Continuing	80%<%R<120%	≥1/batch	
	LCS	80%<%R<120%	≥1/batch	
	MS	75%<%R<125%	≥1/batch	
	Blanks - Lab	mg/kg	≥1/batch	
	Serial dilutions	%D<10%	≥1/batch	
	Interference check std (ICP)	80%<%R<120%	bracket batch	
PRECISION	MSD	RPD<30%	≥1/batch	
	field duplicate	all results < RL	≥1/batch	
REPRESENTATIVENESS	COC	Qualitative	NA	
	hold times/preservation	≤180 days	NA	
	Controlling Documents (Plans, Procedures, Maps, etc)	Qualitative	NA	
COMPARABILITY	Measurement units	mg/kg	NA	
COMPLETENESS	Plan vs Actual samples	>95%	NA	
	usable results vs unusable	>95%		
SENSITIVITY	detection limits	Various	all analytes	

Table D-5 Data Completeness Summary For Building 827

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc)
Beryllium	B827 (interior)	5 biased (interior)	5 real (interior)	No contamination found at any location	OSHA ID-125G – RIN02D0649 No results above action level (0 2ug/100cm^2) or investigative level (0 1 ug/100cm^2)
PCBs	B827 (interior)	2 biased (interior)	2 real (solid)	No contamination due to PCBs	SW 8082 – RIN02S0045 All PCB concentrations below associated action levels
Metals	B827 (interior)	2 biased (interior)	2 real (solid)	No metals exceeded the regulatory limit	SW 6010/6020 – RIN02S0045 TLCP results all below associated action levels
Radiological	Survey Area A Survey Unit G11-A-002 B827 (interior and exterior)	15 á TSA and 15 á Smears (random) & 10 á TSA and 10 á Smears (biased) 2 QC TSA 5% scan	50 real, 2 QC 26 interior/24 exterior	No contamination at any location, all values below unrestricted release levels	No results above $DCGL_W$ or $DCGL_{EMC}$ action level (20 dpm/100cm^2 removable, 100 dpm/100cm^2 average, and 300 dpm/100cm^2 maximum)

[A] Number of asbestos samples required is an estimate only, final number of samples is at the discretion of the IH